

ABSTRACT OF THE DISCLOSURE

Disclosed is are gene sequences encoding γ -tocopherol methyltransferases from photosynthetic organisms. The enzyme γ -tocopherol methyltransferase catalyzes the methylation of γ -tocopherol to yield α -tocopherol, the most bioactive species of tocopherol. γ -tocopherol methyltransferase is believed to be involved in regulating the relative amounts of the various tocopherols present in photosynthetic organisms. By introducing a genetic construct having a γ -tocopherol methyltransferase coding sequence placed under the control of a plant promoter into a plant, transgenic plants can be made having altered γ -tocopherol methyltransferase expression, to effect dramatic changes in the tocopherol profile of the plant.

Transgenic plants can be made that have α -tocopherol as the predominant tocopherol in their seeds and oils.